

CLAIMS

1. A decorative lighting apparatus, comprising:
control circuitry;
5 a plurality of color-control outputs from the control circuitry for coupling to color-control terminals of each one of a plurality of color-controllable lights along a decorative light strand; and
the control circuitry being operative to illuminate the color-controllable lights with a color scheme by repeatedly time-multiplexing color-control signals at the color-
10 control outputs to different sets of color-controllable lights along the decorative light strand.
2. The decorative lighting apparatus of claim 1, wherein each color-controllable light comprises a Red-Green-Blue (RGB) Light-Emitting Diode (LED).
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3. The decorative lighting apparatus of claim 1, wherein each color-controllable light comprises a Red-Green-Blue (RGB) Light-Emitting Diode (LED) having a red color-control terminal, a green color-control terminal, and a blue color-control terminal, the decorative lighting apparatus further comprising:
20 the color-control outputs from the control circuitry for coupling to the red, green, and blue color-control terminals of each color-controllable light of each different set.
4. The decorative lighting apparatus of claim 1, further comprising:
the control circuitry being further operative to repeatedly time-multiplex the
25 color-control signals at the color-control outputs at a rate of 32 Hertz or greater.
5. The decorative lighting apparatus of claim 1, further comprising:

the control circuitry being further operative to repeatedly time-multiplex the color-control signals at the color-control outputs at a rate sufficient such that the different sets of color-controllable lights appear to be simultaneously illuminated.

5 6. The decorative lighting apparatus of claim 1, further comprising:
wherein the color scheme provides at least a first color and a second color;
wherein the different sets of color-controllable lights comprise at least a first set
and a second set; and

10 wherein the first set is controlled to be illuminated with the first color and the
second set is controlled to be illuminated with the second color.

15 7. The decorative lighting apparatus of claim 1, further comprising:
the control circuitry being further operative to illuminate a color of the color
scheme in the color-controllable lights with use of pulse-width modulation (PWM) and/or
current control at the color-control outputs.

20 8. The decorative lighting apparatus of claim 1, further comprising:
one or more set selection outputs from the control circuitry, each set selection
output for coupling to one of the different sets of color-controllable lights.

25 9. The decorative lighting apparatus of claim 1, wherein the different sets of
color-controllable lights are positioned in a linear fashion along the decorative light
strand such that each color-controllable light of each set is interleaved between color-
controllable lights of the other set or sets.

10. The decorative lighting apparatus of claim 1, further comprising:
a housing; and

an interface connector attached to the housing which provides the plurality of color-control outputs for coupling to the color-control terminals of the color-controllable lights.

5 11. The decorative lighting apparatus of claim 1, further comprising:
a decorating selector which provides a plurality of user-selectable switch settings;
and

the control circuitry being further operative to illuminate the color-controllable lights with a different color scheme for each user selectable switch setting, by repeatedly
10 time-multiplexing color-control signals at the color-control outputs to different sets of color-controllable lights along the decorative light strand.

12. The decorative lighting apparatus of claim 1, wherein each color-controllable light comprises a Red-Green-Blue (RGB) Light-Emitting Diode (LED)
15 having a red color-control terminal, a green color-control terminal, and a blue color-control terminal, the decorative lighting apparatus further comprising:

the color-control outputs from the control circuitry for coupling to the red, green, and blue color-control terminals of each color-controllable light of each different set;

one or more set selection outputs from the control circuitry, each set selection
20 output for coupling to one of the different sets of color-controllable lights through their common anodes or common cathodes;

a housing;

the control circuitry being carried in the housing;

25 a decorating selector which provides a plurality of user-selectable switch settings;
and

the control circuitry being further operative to illuminate the color-controllable lights with a different color scheme for each user selectable switch setting, by repeatedly time-multiplexing color-control signals at the color-control outputs to different sets of color-controllable lights along the decorative light strand.

13. A method of illuminating a decorative lighting apparatus with one or more color schemes, comprising:

- selecting a first set of color-controllable lights along a decorative light strand;
- 5 controlling a plurality of color-control outputs which are coupled to color-control terminals of the first set of color-controllable lights to illuminate a first color in the first set of color-controllable lights;
- selecting a second set of color-controllable lights along the decorative light strand;
- 10 controlling the plurality of color-control outputs which are coupled to color-control terminals of the second set of color-controllable lights to illuminate a second color in the second set of color-controllable lights; and
- repeating the selecting and the controlling to produce a color scheme along the decorative light strand which includes the first color and the second color.

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14. The method of claim 13, wherein the color-controllable lights comprise color-controllable red-green-blue (RGB) light-emitting diodes (LEDs).

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15. The method of claim 13, further comprising:

- wherein the color-controllable lights comprise color-controllable red-green-blue (RGB) light-emitting diodes (LEDs);
- wherein each color-controllable RGB LED has red, green, and blue color-control terminals; and
- wherein the one or more color-control outputs are coupled to the red, green, and 25 blue color-control terminals of the color-controllable RGB LEDs.

16. The method of claim 13, wherein the first color is different from the second color.

17. The method of claim 13, wherein the first color is the same as the second color.

18. The method of claim 13, wherein the act of repeating is performed at rate
5 sufficient such that the first and the second sets of color-controllable lights appear to be simultaneously illuminated.

19. The method of claim 13, further comprising:
receiving a user switch setting of a plurality of user-selectable switch settings
10 associated with a plurality of color schemes of the decorative lighting apparatus; and
selecting the color scheme in response to the user switch setting.

20. A decorative lighting apparatus, comprising:
a decorative light strand having a plurality of wires and a plurality of color-
15 controllable lights positioned along the wires;
an interface connector coupled to a first end of the plurality of wires;
the interface connector including:
a first electrical contact coupled to red color-control terminals of the color-
controllable lights;
20 a second electrical contact coupled to green color-control terminals of the color-controllable lights;
a third electrical contact coupled to blue color-control terminals of the color-controllable lights; and
one or more fourth electrical contacts for use in selectively enabling
25 different light sets of the color-controllable lights for color control.

21. The decorative lighting apparatus of claim 20, wherein the interface connector comprises a male interface connector and the electrical contacts comprise male pin contacts.

22. The decorative lighting apparatus of claim 20, wherein the interface connector comprises a female interface connector and the electrical contacts comprise female pin contacts.

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23. The decorative lighting apparatus of claim 20, wherein the plurality of color-controllable lights comprise color-controllable red-green-blue (RGB) light-emitting diodes (LEDs).

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24. The decorative lighting apparatus of claim 20, further comprising:
wherein the plurality of color-controllable lights comprise color-controllable red-green-blue (RGB) light-emitting diodes (LEDs);

wherein the interface connector comprises a male interface connector and the electrical contacts comprise male pin contacts coupled to the first end of the plurality of wires;

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a female interface connector coupled to a second end of the plurality of wires;
the female interface connector including:

a first female pin contact coupled to the red color-control terminals of the color-controllable lights;

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a second female pin contact coupled to green color-control terminals of the color-controllable lights;

a third female pin contact coupled to blue color-control terminals of the color-controllable lights; and

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one or more fourth female pin contacts for use in selectively enabling different light sets of the color-controllable lights for color control.

25. The decorative lighting apparatus of claim 20, wherein the at least a fourth electrical contact comprises two (2) or four (4) electrical contacts.